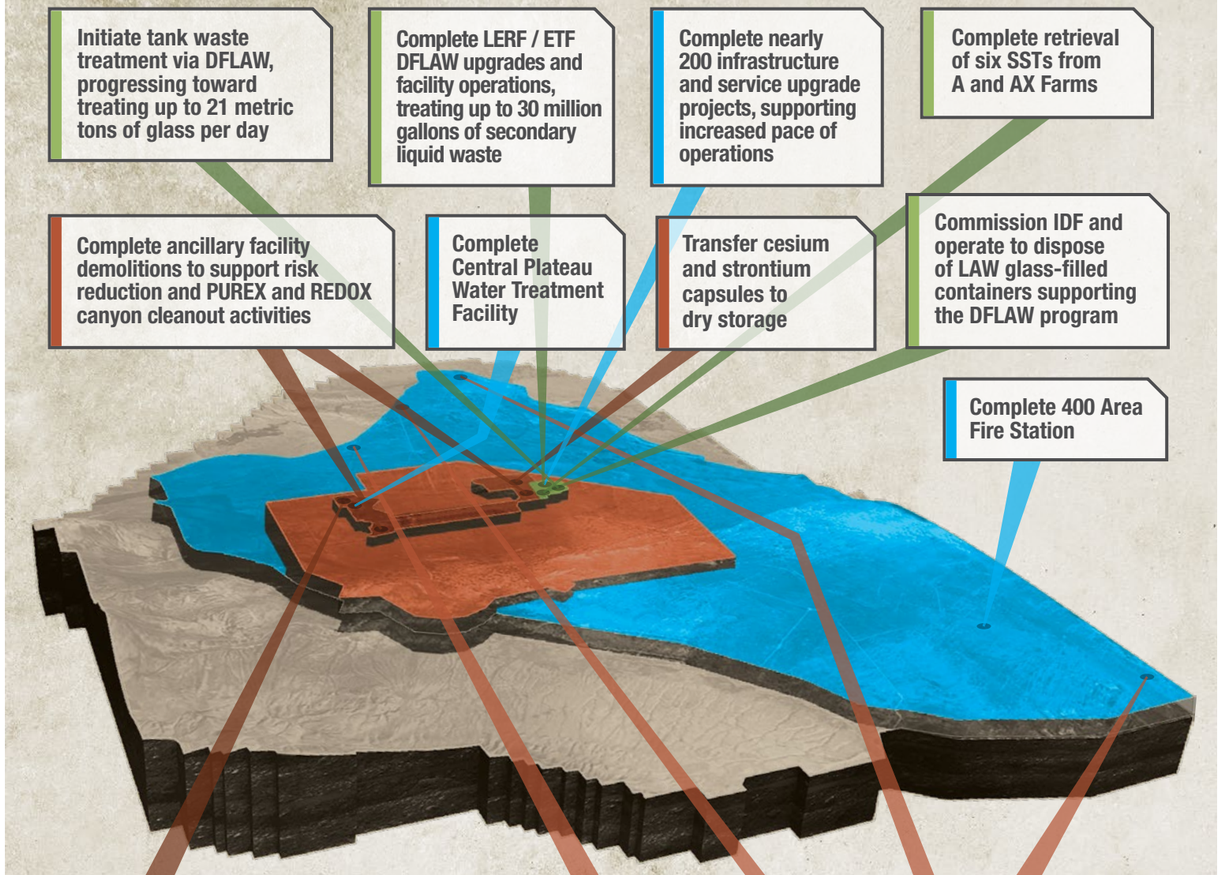
## THE HANFORD SITE CLEANUP FY 2023 – FY 2027



Initiate tank waste treatment via DFLAW, progressing toward treating up to 21 metric tons of glass per day

Complete LERF / ETF DFLAW upgrades and facility operations, treating up to 30 million gallons of secondary liquid waste

Complete nearly 200 infrastructure and service upgrade projects, supporting increased pace of operations

Complete retrieval of six SSTs from A and AX Farms

Complete ancillary facility demolitions to support risk reduction and PUREX and REDOX canyon cleanout activities

Complete Central Plateau Water Treatment Facility

Transfer cesium and strontium capsules to dry storage

Commission IDF and operate to dispose of LAW glass-filled containers supporting the DFLAW program

Complete 400 Area Fire Station

Treat 5 billion gallons of contaminated groundwater at the 200 West Area pump and treat facility

Obtain 100-K Area final ROD

Continue K West Basin demolition and removal

Treat 1.8 billion gallons of contaminated groundwater at 100-K Area pump and treat facilities

Complete waste site 300-296 excavation and initiate 324 building deactivation

Obtain 100-N Area final ROD

Treat 2.3 billion gallons of contaminated groundwater at 100-D/H Areas pump and treat facilities

TANK WASTE TREATMENT

RISK REDUCTION

MISSION AND SITE INFRASTRUCTURE


THE HANFORD SITE

# 5-YEAR PLAN

ONE HANFORD: DELIVERING ON ENVIRONMENTAL REMEDIATION AND TANK WASTE TREATMENT

## GOALS: SAFELY DRIVING RISK REDUCTION WITHIN FUNDING ALLOCATION

### MINIMUM SAFE OPERATIONS

Safely, securely and compliantly **MANAGE** Hanford's critical resources efficiently, including improving infrastructure to reliably sustain the Hanford cleanup mission. **MAINTAIN** safeguards and security for Hanford Site.

### WASTE TREATMENT

Continue treatment of tank waste, **OPERATING** the Waste Treatment and Immobilization Plant (WTP) via the Direct-Feed Low-Activity Waste (DFLAW) program to vitrify (immobilize in glass) tank waste for disposal. **MANAGE** secondary liquid waste and solid wastes generated in the treatment processes. **CHARACTERIZE** waste generated from remedial actions for treatment and disposal. **EXPLORE** and **IMPLEMENT** opportunities for alternate treatment and disposition pathways.

### RISK REDUCTION

**CLEAN UP** Central Plateau and Columbia River Corridor waste sites and **DEMOLISH** facilities supportive of ongoing groundwater remedial actions. **MINIMIZE** the footprint requiring extensive surveillance and maintenance activities. Safely **STORE** tank waste until it can be transferred to treatment facilities and **CLOSE** waste management areas.

### WASTE DISPOSITION

**MANAGE** the interim storage of K Basins sludge, cesium and strontium capsules, loaded ion exchange columns, spent nuclear fuel and transuranic wastes until final decisions regarding their treatment and / or disposition are **ESTABLISHED** while **OVERSEEING** disposal facilities operations.

### LONG-TERM STEWARDSHIP

**TRANSITION** geographic areas where facility demolition and waste site remediation activities are complete to a surveillance-and-maintenance program, ensuring long-term protection of human health and safety and environmental resources. **PERFORM** institutional controls monitoring and reporting in support of federal Comprehensive Environmental Response, Compensation and Liability Act five-year reviews.

## MAJOR COMPONENTS OF THE HANFORD SITE CLEANUP MISSION

### TANK WASTE TREATMENT

- Safely managing tank waste, contained in 177 underground storage tanks within 12 single-shell tank (SST) farms and 6 double-shell tank (DST) farms, until it is treated
- Initiating and optimizing tank waste treatment via DFLAW
- Resume WTP High-Level Waste (HLW) facility design and construction
- Transferring waste from SSTs into DSTs to reduce the risk of tank leaks and stage the waste for treatment
- Operating the 222-S Laboratory to provide tank waste analytical services for the Hanford mission

### RISK REDUCTION

- Comprised of 35 soil, 6 legacy processing facilities and 10 groundwater operable units (grouping of similar scope for decision-making) that require remediation
- Progress groundwater remediation, including pump and treat operations, to remove contaminants
- Remediating contaminated waste sites and demolishing facilities
- Operating on-site waste disposal facilities
- Transition remediated geographic areas to the Long-Term Stewardship program

### MISSION AND SITE INFRASTRUCTURE

- Maintaining and improving critical infrastructure to sustain the Hanford cleanup mission for decades of operations
- Focused projects in water systems, electrical utilities, facilities, network and information technology, and transportation

OFFICE OF RIVER PROTECTION
United States Department of Energy

**ENABLING ASSUMPTIONS**
**– Annual funding of approximately $2.7 billion**
**– COVID-19 effects not fully incorporated**

RICHLAND OPERATIONS OFFICE
United States Department of Energy

HNF-68192 DRAFT (9/27/2022)

# THE HANFORD SITE

Time frames and accomplishments assume approximately $2.7 billion annual funding profile

## FY 2022

CRITICAL ACTIVITIES:
**TANK WASTE TREATMENT**

- ✓ Complete AX-102 and AX-104 SST retrievals (consent decree milestone B-3)


- ✓ Initiate Tank-Side Cesium Removal (TSCR) system operations [PICTURED]
- ✓ Complete WTP loss-of-power testing
- ✓ Complete WTP water run
- › Complete first Low-Activity Waste (LAW) facility melter heatup
- › Initiate LAW facility cold commissioning with simulated tank waste
- › Initiate second LAW facility melter heatup

**RISK REDUCTION**

- ✓ Complete demolition of Plutonium Uranium Extraction Plant (PUREX) North Facility complex
- ✓ Implement 200-BP-5 and 200-PO-1 interim record of decision (ROD)
- ✓ Complete transfer of garnet filter and sand filter media to T Plant
- ✓ Complete installation of seven micropiles at 324 building to support waste site 300-296 excavation

**MISSION AND SITE INFRASTRUCTURE**

- ✓ Complete 12-inch potable water line loop to WTP

✓ COMPLETE
› CARRYOVER TO FY 2023

## FY 2023

CRITICAL ACTIVITIES:
**TANK WASTE TREATMENT**

- Optimize TSCR operations to support delivery to WTP LAW
- Complete second WTP LAW facility melter heatup and initiate DFLAW operational readiness review
- Complete management assessment of WTP LAW cold commissioning
- Complete upgrades at Integrated Disposal Facility (IDF) and readiness reviews required for DFLAW startup
- Resume 242-A evaporator operations
- Complete upgrades to Liquid Effluent Retention Facility (LERF) and Effluent Treatment Facility (ETF) necessary for WTP LAW hot commissioning
- Complete construction and readiness review for LERF Basin 41
- Progress HLW facility design

**RISK REDUCTION**

- Complete construction of the interim safe storage structure around K East reactor [PICTURED]
- Complete modifications to Waste Encapsulation and Storage Facility (WESF)
- Complete installation of 324 building micropiles to support excavation of waste site 300-296
- Initiate installation of capsule transfer system equipment at WESF
- Complete demolition of PUREX north facility complex and close tanks under federal Resource Conservation and Recovery Act (RCRA)
- Complete demolition preparation activities at plutonium concentration facility near B Plant
- Complete loading of high dose debris into vertical pipe casing system
- Complete installation of temporary ventilation in Reduction-Oxidation Plant (REDOX) to support removal actions

**MISSION AND SITE INFRASTRUCTURE**

- Initiate reconfiguration and upgrades for the export water system at 100-D Area
- Complete construction of building shell for Central Plateau Water Treatment Facility

## FY 2024


CRITICAL ACTIVITIES:
**TANK WASTE TREATMENT**

- Complete readiness review to authorize hot commissioning at LAW facility [PICTURED]
- Complete hot commissioning of WTP LAW facility and Effluent Management Facility
- Initiate construction of advanced modular pretreatment system
- Complete retrievals from AX Farm and initiate retrievals from A Farm
- Complete construction on U Farm surface barrier

**RISK REDUCTION**

- Complete characterization, dewatering and grouting at K West Basin
- Complete demolition preparation activities at high-risk Central Plateau facilities and demolish REDOX annexes
- Complete removal of REDOX plutonium recovery hood
- Obtain 100-K Area ROD

**MISSION AND SITE INFRASTRUCTURE**

- Central Plateau Water Treatment Facility operational
- Replace 200 West Area potable water tank
- Complete 100 Area mission critical distribution feeders

## FY 2025


CRITICAL ACTIVITIES:
**TANK WASTE TREATMENT**

- Optimize DFLAW operations
- Resume construction at the WTP HLW facility [PICTURED]
- Initiate renovations in rooms at 222-S laboratory

**RISK REDUCTION**

- Initiate transfer of cesium and strontium capsules to capsule storage area
- Initiate demolition of K West Basin
- Initiate demolition of high-risk Central Plateau facilities and close hexone tanks under RCRA
- Initiate removal actions at PUREX canyon

**MISSION AND SITE INFRASTRUCTURE**

- Complete reconditioning of 230kV transmission system
- Complete 400 Area fire station
- Complete cross tie of sanitary water system between 200 East and 200 West Areas
- Replace 200 East Area potable water tank

## FY 2026

CRITICAL ACTIVITIES:
**TANK WASTE TREATMENT**

- Initiate tank farm upgrades to support future HLW treatment

**RISK REDUCTION**

- Complete demolition of K West Basin
- Complete removal of all mixed waste containers from outside storage areas A and B
- Complete excavation of waste site 300-296 and initiate deactivation of 324 building
- Complete demolition of high-risk facilities near B Plant
- Initiate deactivation of plutonium concentration facility at T Plant


- Initiate certification process for contact-handled transuranic waste by processing a container [PICTURED]
- Obtain 100-N Area ROD
- Initiate remediation of waste sites per final River Corridor RODs

**MISSION AND SITE INFRASTRUCTURE**

- Complete reconfiguration and upgrades for the export water system at 100-D Area
- Initiate replacement of single-circuit distribution poles
- Initiate construction of Fleet Maintenance Complex
- Complete preservation upgrades at B Reactor
- Complete 300 Area lighting along route 4S

## FY 2027

CRITICAL ACTIVITIES:
**TANK WASTE TREATMENT**

- Complete construction of advanced modular treatment system


**RISK REDUCTION**

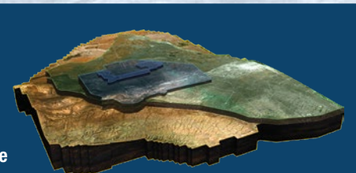
- Transfer cesium and strontium capsules to dry storage [PICTURED]
- Complete deactivation of 324 building
- Initiate characterization and hazard abatement activities at PUREX canyon
- Complete characterization at REDOX

**MISSION AND SITE INFRASTRUCTURE**

- Replace vertical turbine pumps at 100-B Area river pump house

# PACE OF OPERATIONS

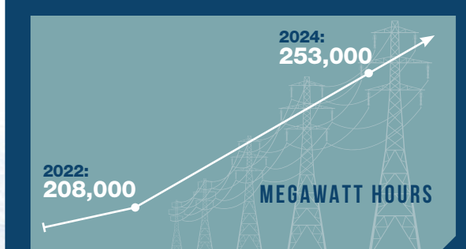
### ONE HANFORD TRANSITION



As cleanup progresses, the Site has transitioned to an integrated "One Hanford" approach to operations. The pace of the mission is increasing and expanding to 24/7 operations to support tank waste treatment. Coordinated planning and execution will set the conditions for success.

### DIRECT-FEED LOW-ACTIVITY WASTE

The DFLAW program at the WTP is the first of many long-term cleanup activities that will be employed at Hanford. Hot commissioning will begin as early as December 2023, initiating an exciting new phase of the Hanford cleanup mission.




### ESSENTIAL SERVICES

The Hanford Site is transitioning to decades of 24/7 operations. This will affect how essential services will continue to be safely and flexibly delivered with the right level of rigor and robustness. Today, nearly 200 infrastructure and service upgrade projects are prioritized and are being planned through FY 2027 to support the pace of operations. Currently, WTP utilizes 42 site services and will increase up to 76 services, of which 27 are required for 24/7 operations.

### THE FUTURE OF CLEANUP

By FY 2027, tank waste treatment will ramp up toward producing 21 metric tons of glass per day for disposal at IDF, retrieve six additional SSTs and resume construction on the HLW Vitrification Facility.

Risk reduction will have completed the transfer of cesium and strontium capsules to dry storage, reduced mortgage costs for several aging facilities, obtained final 100-N and 100-K RODs, initiated the transuranic waste certification process, and treated approximately 10 billion gallons of groundwater.

Mission and site infrastructure will construct and operate the Central Plateau Water Treatment Facility, export water system upgrades at 100-B and 100-D Area pump houses, and 400 Area Fire Station. This scope safely, efficiently and effectively reduces risk and advances the Hanford Site cleanup mission.